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RCEME TECHNICAL BULLETIN

VOLUME 12, NUMBER 3 JULY 1967

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RCEME TECHNICAL BULLETIN

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removing front end of Jeep

THIS is the last issue of this Bulletin from Ottawa. Future issues beginning with the October one, will be edited and published at the RCEME School McNaughton Barracks, Kingston, Ontario.

This Technical Bulletin is issued under the authority of Lt Col GW Bruce, CD, SO Weapon Systems Management Land, Materiel Command Headquarters, who has approved the contents for publication.

The Bulletin is published to assist RCEME personnel in keeping abreast of current trends in developments, to amplify or emphasize technical instructions, to circulate news of Corps and individual activities, and to provide a forum for discussion and the exchange of ideas by members of the Corps. The information and statements herein do not necessarily represent official policy and are not to be quoted as authority for action.

EDITORS

DC Paterson — Editor
Maj HA Rosson, CD — Technical Exchange Column

RANDOM THOUGHTS OF A RETIRING EDITOR

By DC Paterson

Did you ever wonder how the Corps got its quarterly magazine and how a WO2 clerk ever got mixed up with it? Not too many people still around know so lend an ear and I'll tell you about the early days - the days of the original RCEME Quarterly.

Your director in 1949 was Colonel CR Boehm, OBE, and as both RCOC and RC Sigs had magazines, he decided that RCEME should do as well. Capt Goodspeed edited the RCOC Quarterly at one time - he has since become quite famous as a military writer and historian.

The Publication's officer in DME at that time was Capt Rod (Major RL, retired) MacDonald; he was directed to get a working editor. I was editing as well as writing CALEMEIs in Vehicle section and Capt Mac, knowing I had studied journalism, asked me if I'd like to help him get out a Corps paper and that's how it all started - 18 years ago last January.

Some of our readers were not born when I started work at the same desk I've used all that time: 8 years as a WO2 and 10 as a civilian editor. The Korean War was still in the future; nobody had heard of Camp Rafah; and Cyprus was an island in the eastern Mediterranian where British military retired to. Why, there was still even a Prairie Command!

I don't suppose Rod MacDonald nor I will ever forget that first issue or even the next two or three.

The first was only twenty pages, typed on an ordinary machine but it included a feature which has been one of the most looked-for ever since: WHO'S WHERE, my own brainchild. (Not many senior officers of this first list are still in the Forces: two lieut-colonels (now brigadiers) A Mendelsohn and KH McKibbin; several majors, too, GW Bruce, RH Hodgson, AH Lewis, AL Maclean, AM Reid and KR Ward.

You may not believe it, but the Who's Where was one of my biggest headaches, because Col Boehm's 'where' was often a bit ahead of Pers RCEME's 'where'. When I had the paper all ready for the printer, I'd show it to the Director for his final OK. Invariably he'd have later information on Joe Blow's promotion or posting because he had just authorized it and he would usually insist on my making the changes.

All we had for the first four covers was a montage centered by the original cap badge. We DID change the color each issue. The feature story was, appropriately enough, about the RCEME School, with pictures of the White House, and the HQ staff. Also in that first issue was a story by Capt FR (Freddie) Kaye "RCEME on the Range" dealing with Corps exploits with the rifle. This was a subject I followed up and spent many pleasant afternoons in the following years with RCEME marksmen at DCRA meets.

In Jan 1950 the 'forcene' horse was introduced and who will forget the ribald remarks

(continued overleaf)

we heard. By this time we had acquired an IBM machine which gave the Quarterly a type set look; Capt MacDonald went back to school for the EME officers' Course; 2 Lt EG Jones was attending Queen's.

In July 1950 Lieut-Colonel Serge Stucken, DDME, joined me as managing editor, a happy association that continued until Jan 1953. On our cover we showed Gen AGL McNaughton presenting the drum major's mace to Sgt (now major) Jack Cooper.

Probably the best cover (Oct 50) we ever used was the "Horse Recovery" by Canada's own - RCEME's own - famous cartoonist Len Norris. Capt Norris was one of the leading figures in CAM, the Canadian Army Maintenance magazine published by D of MM (DME) during the last years of the war.

In Jan 51 the 25 CDN Support Workshop left from the school for Fort Lewis, Washington, enroute to Korea. DME became DEME on 27 Jun, and Capt Tod Sloan took his advance party of 194 Workshop to Germany.

The late Colonel JR Dunlop succeeded Colonel Boehm as Director in Sep 52.

Under Serge Stucken's persuasive manner by the end of 1952 the Quarterly was thriving; lots of Corps personnel in pictures; news from Korea and Germany; 48 pages each issue was no problem and I was all set to visit Whitehorse to write a story on the highway - winter clothing drawn, Leica winterized and RCAF plane laid on - but time was running out and we didn't know it.

Horses had been discovered on the payroll in Petawawa; too much paper was being passed back and forth between Commands and AHQ; and so a board of officers was formed to clean house by "Exercise Paperchase". All unnecessary paper was taboo and this included Corps' Quarterlies. The axe fell while we were getting the Jan 53 issue ready but we were able to complete it, but my news gathering trip was cancelled.

This must be the high spot (and the low) in my career on the Corps magazines. Never again did any one show the energy and resourcefulness of Colonel Stucken. People were sent to trade fairs in Brussels and Chicago; to Germany to see why transmissions were failing; on courses and seminars to learn the new techniques; but never the editor to get news of what our men were doing. We've expected and begged others to write interesting stories but it hasn't worked out; the number of writers in the last few issues has been less than adequate, to say the least. But to get back to history.

DC Paterson

After a lapse of some 3 years, we timidly put together a 'technical bulletin', with emphasis on the technical content. Lieut Colonel Elmsley was DDME and he put the necessary effort into getting it started. It was printed foolscap size and was very dull but - Who's Where appeared in the first issue May 1956.

Our courage returned when no observations were raised about the Bulletin and in Jan 62 we returned to the original Quarterly format but with less 'personal' news. Whats' happened since is familiar to most readers; Lieut Colonel Sherren followed Elmsley; new features have been added from time to time and I think it's safe to say, the arrival of each issue is eagerly awaited by most members of the Corps.

Now, as I am turned out to pasture and the Bulletin becomes the chore of the School staff, you should all heed Colonel Boehm's concluding remarks in his foreword to the first issue in 1949. Here it is; "The success of this publication depends entirely upon the contributions that you make. You need have no hesitation or feeling of reserve... Good arguments or disagreements... are generally enjoyed."

A Decade of Service Ends

By Major EB Creber, CD

At 1700 hrs on 19 May, 1967, the UN Flag was ceremoniously lowered at King's Gate on the border between Israel and the UAR at the northern end of the Gaza Strip. Thus ended a decade of work of the United Nations Emergency Force in the Middle East, in which thousands of Canadian servicemen had participated.

For the Corps of RCEME this act also marked the end of a significant and distinctive period of service to the United Nations. The importance of the RCEME contribution to the operational effectiveness of UNEF was fully recognized by the senior members of the Force. In fact, in April 1967, on the occasion of the last formal Canadian contingent Medal's Parade, Major General Indar Jit Rikhye, Commander of UNEF, specially praised the workshop personnel for their excellent record of service, and took particular care to note the way in which the drastically reduced backlogs has increased the operational effectiveness of the whole of UNEF.

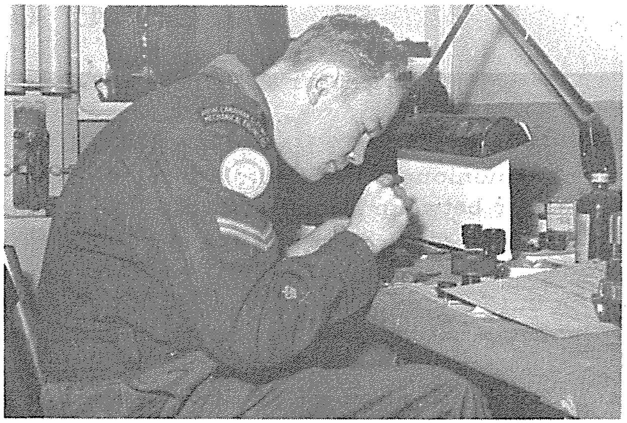
History

Many readers have served in the UNEF workshop over the past 10 years, but for those who did not, the following brief summary may be helpful.

The first elements of 56 Infantry Workshop arrived in Port Said in late 1956 along with other service units and a Recce Squadron as the Canadian contingent within the newly-created United Nations Emergency Force. During its first year with UNEF, the workshop was located in Ismailia on the Suez Canal, where it operated with field type machinery lorries and office vans and its personnel lived under canvas. As Ismailia was close to civilian contractors, but not to the main workload 150 miles away in the Gaza strip, it was more convenient to move the workshop to Camp Rafah which is about one mile west of the Gaza Strip. Camp Rafah was originally built by the British as a base maintenance depot before World War 1. Although it had changed hands many times over the years it was well suited as the Base Maintenance Area for UNEF. The Workshop was located in one of the three largest permanent buildings, where it served UNEF until the Canadian contingent was hurriedly withdrawn in the last days of May 1967.

Although the Workshop became static in the sense that it occupied a permanent building in Camp Rafah, and gradually had permanent quarters built around it, with improvements to the messes and canteens being made each year, the shop was a "field workshop" in the most important sense of that term. The units it served had operational commitments 24 hours per day and consequently their needs had to be met as quickly as the resources of the Workshop would permit. In another sense also the Workshop was far from being static in nature. That is, in its functions and organization. Since there was no base repair organization behind the RCEME field workshop, base repair became an early problem for UNEF. At first this was solved by utilizing civilian repair facilities in Ismailia and Cairo, some work being done in places as far away as Alexandria and Suez city. As experience was gained, it was shown that limited base repair could be more economically undertaken by the workshop with the secondary benefit of better quality control of the output. In addition, studies showed that some assemblies could be most economically replaced by entering into an exchange system with the manufacturers. This was achieved in 1965 with Volkswagen of Germany for engines and transaxle assemblies. Also it was found that better results could be obtained in the overhaul of diesel generating sets at contractors in Beirut, Lebanon. However, with these few exceptions, the majority of base repairs was absorbed within the existing facilities of 56 Infantry Workshop. By this means, not only was the service to UNEF improved over the years, but also the trades training capability of this RCEME unit was greatly enhanced. Spurned on by the incessant desire of UNEF to economize, the workshop also changed its organization while it was evolving better repair procedures. Since it was less expensive to hire local civilians than to keep professional soldiers in UNEF, the workshop gradually reduced its military strength from over 200 to 134 all ranks plus 49 civilians. It should be noted that other changes in the size

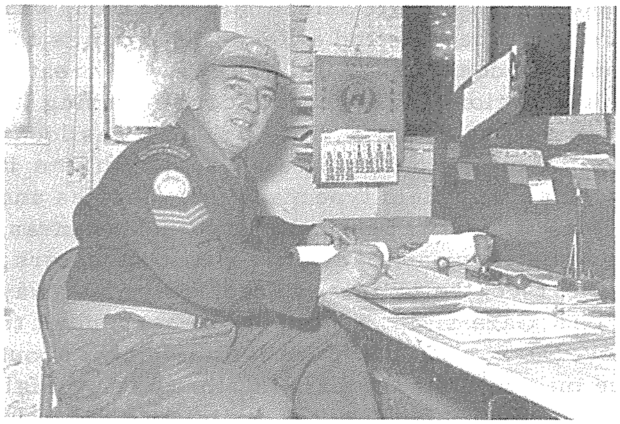
Blood donors WO2 R. Brown, Cpl Kapko and Cfn McLean are congratulated for their ready response to a call from the Baptist Hospital in Gaza. Not shown were Cpl Kaye and Cfn Hildebrand who also received a medallion from the Hospital for their blood donation.



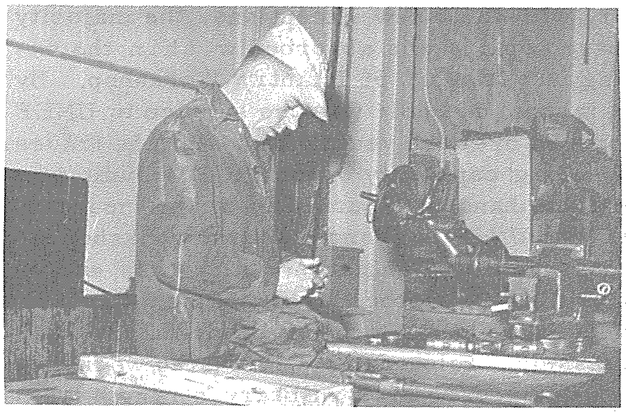
Cpl Crozier repairs a pair of binoculars in the Instrument Section

Can you get just one more pump out of all those broken ones Cfn Price?

Cfn Sheats and Cfn Hartley at the carburetor rebuild bench



Sgt R Skippen at work in Component Rebuild Section office



Cpl Shepherd rebuilds an axle assembly

and structure of UNEF, notably the withdrawal of the Canadian Recce Sqn (Feb 1966) also reduced the workload somewhat to permit the total workshop strength to drop below 200. However, there were civilians in the workshop from its very beginning in Ismailia. One civilian, Vince Platone, was hired as a civilian contract liaison clerk when the workshop began operations in Ismailia, and be gradually rose to be Administrative Assistant to the Control Officer in August 1966. Those who remember the loyal and efficient support given by Vince over the years will be pleased to hear that he had made all the arrangements necessary to take his family back to his native Italy during the last weeks of May, 1967. For the record, the most recent proposal for revision of the workshop establishment, made in April 1967, but not submitted beyond HQ UNEF, called for five officers, and 94 rank and file plus 87 civilians, provided suitable skilled civilians could be hired. The value of the contribution made by the civilian staff of the workshop in terms of continuity of procedure and productive effort will be long remembered by all those who had the privilege of working with them.

Workload in UNEF

The changes in organization which the workshop underwent over the years was influenced not only by the desire to adopt economic procedures but also by the constantly changing workload. This is perhaps best illustrated by the fact that when UNEF was first set up, each of the seven contributing nations: Brazil, Canada, Denmark, India, Norway, Sweden and Yugoslavia, brought their own military equipment with them. The problem facing 56 Infantry Workshop in trying to adapt Canadian and British tools to the repair of the wide variety of equipment which this multi-nation force assembled in the Sinai Desert was enormous. Spare parts supply was most difficult and standard repair procedures soon became impossible.

Fortunately, this system was gradually displaced by the UN setting up its own equipment and spare parts procurement program. Still, standardization was only slowly achieved and remnants of the original equipment were still seen about UNEF to the very last day. Even with centralized buying, standardization was difficult to achieve. The UN is a world organization and it was natural that the world market would be tapped for UNEF equipment and supplies. Thus it was not surprising to find German Volkswagens, French Citroens, British Bedfords, US Jeeps and Power Wagons, Dutch radios, Japanese tape recorders and a variety of other items from as many more nations. Is it any wonder that some of the younger tradesmen gaped in amazement at their first sight of a Citroen car with its air-cooled two-cylinder horizontally opposed engine driving the front wheels through a centrifugal clutch and four speed gear box! It would be difficult to find a situation which could match the challenge to a tradesman which one year in UNEF presented. The results achieved speak clearly for the initiative and ingenuity of our tradesmen as well as for the calibre of training they have been given.

Some Highlights from the Past Year

The year from May 1966 to May 1967 was not only significant for the technical achievements of the Workshop, but for its fine record in sports and other recreational activities as well. The sunny climate of the area is well suited to outdoor recreation and fortunately most facilities were right at hand in Camp Rafah.

In team sports the workshop softball team turned in a fine performance all year. In the fall season, under the able leadership of Cpl McNeil, the team earned a good place in the league standings and then swept the finals to win the Canadian Contingent Softball Championship. As a reward for their success, the team was flown to Cairo in December for a double-header against an all-star team selected from the seven-team league of the US Embassy. In spite of the enthusiastic entertainment given our boys by the US team, the workshop unceremoniously trounced their hosts in two days of good sport.

Individuals also shone in some competitions. Cfn Lortie beat allcomers to take the Canadian Contingent Chess Championship with Cpl Crozier coming in second during the Fall competitions. Cpl Crozier retained the trophy for the workshop by checkmating his opponents in the Spring competition.

Members of the workshop were involved whenever a challenge was forthcoming; success

Winners of Fall 1966 Season Canadian Contingent 'A' League Softball Championship.

Back Row L to R - Major E Creber (President Softball League), Cfn Ross, Cfn Gee, Cpl Marche, Cfn Peddie, Cfn Gauthier, Cfn Levesque, Sgt Connatty, Cfn Morrison, - Cpl Gordon

Front Row L to R - Cfn Beaulieu, Cpl Lesage (Captain), Cpl Lothman, Cpl Gaudet, Cpl McNeil (Coach)

Major E Creber adjusts feathered headress presented by Capt DL Clarke when WO1 Guilfoyle was named a "Chief Warrant Officer" at the Camp Rafah Senior NCO's quarters.

L to R - S/Sgt AE Hawkins, Capt Doug Clarke, Capt Bob Seguin, S/Sgt Bell Leslie, Sgt Bob Apt (RCOC), S/Sgt Al Miller, Sgt Bob Smith, Sgt Walsh, WO1 Mike Guilfoyle Major E Creber, Sgt Bob Kearns

was not ours in every case, but there was always a good spirit of sportsmanship present. In July 1966, the workshop came second in the overall total score at the Rafah Beach Dominion Day celebrations, but captured first place in some of the important events like volleyball and the "private to major" relay race.

Throughout the year, members of the workshop won many honours on the golf course where pleasant sunny hours were spent taking out the day's frustrations upon the little ball. Such people as WO2 Thorne, S/Sgt Lascelles, Cpl Kaye and low scorer Cfn Coady were frequently among the winners when the results of competitions were announced. Many will remember the mixed feeling of pride and chagrin expressed by teacher S/Sgt Weekes when he was first beaten by his star pupil S/Sgt Leslie!

The year ended on a high note with the Corps Birthday celebrations held all day of 13 May. The morning was filled with games of bridge, cribbage, darts, ping-pong and horseshoes, culminating in a high spirited game of volleyball with the corporals and men defeating the officers, warrant officers and senior NCOs in two out of three games. The afternoon got off to a fast start with a game of donkey baseball, umpired by our two Camp Rafah padres - Capt Hanna and Major Rochette. The workshop mascot an 18 month old donkey appropriately named "Sgt HH Backsheesh", nearly broke up the game when he decided to give amorous chase to the glamorous first base donkey! Not many runs were scored, but much fun was had, and by now S/Sgt Campbell will have nearly gotten over his broken hand incurred when he and his donkey decided they were mutually incompatible.

Later in the afternoon several camel races were held but no one mastered the art so skillfully as Sgt (Lawrence of Sinai) Hansen who managed to get more knots out of his ship of the desert than any one else. A tug-of-war ended the sport's events for the day. If the corporals and men had played fair, they would surely have lost, but as they found that 14 worked better than 10, they easily overcame the valient efforts of the warrant officers and senior NCOs to pull the rope to victory.

The day was appropriately climaxed by a very well-prepared steak dinner held in the Men's Mess followed by the awarding of prizes to the many winners of the day's events. Many 'Maa El Salamas' (good bye - to you without sand in your shoes) were also said on this occasion, although none realized that this would mark the final farewell to the more than 10 years of RCEME service to the first UNEF in the Middle East.

The Last Days

When the UAR requested the removal of UNEF from UAR territory, it was originally believed that 45 days would be available to complete an orderly withdrawal. Plans were made which included a gradual reduction in workshop strength while continuing to give essential service to UNEF. This and many other plans were made and dropped in quick succession as the withdrawal of the Canadian contingent was shortened from 45 days to 10 days to 48 hours. In the end, the workshop tools were packaged and left in the workshop for takeover by a member of the UN International staff.

Sgt HH Backsheesh and friends at Corps birthday celebrations, 15 May 66, Camp Rafah, Egypt. Note rank badge on arm band and most UN-amorous expression

School Celebrates 23rd Birthday

After a week of rain, Friday 12 May 1967, dawned bright, clear and cool for the 23rd Corps Birthday Parade and annual inspection, Ceremonies began with a parade on the main parade square. The School was formed up in four companies of three platoons each with the RCEME School Band providing the music. Commodore RW Timbrell, DSC, CD, Chief of Staff, Administration and Logistics, Headquarters Training Command, inspected the parade and took the salute.

Following a luncheon in the Officers' Mess, Commodore Timbrell inspected the companies of the School.

The formalities being completed, all ranks prepared for an evening of celebrations. A stag party for the men was held in the Drill Hall with entertainment provided by a troup of entertainers complete with exotic dancer.

Formal dances were held at the Junior Ranks' Club, the Sergeants' Mess and the Officers' Mess. Commodore Timbrell and Colonel Maclean attended each function for the ceremonial cutting of the birthday cake.

Saturday, the 13th, was observed as a day of rest, relaxation and recuperation much needed by many members of the staff.

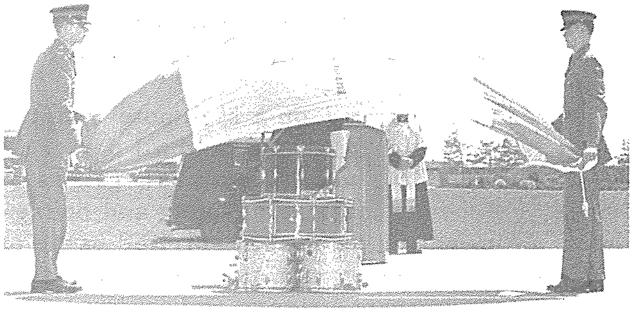
Sunday at 1100 hrs the Corps of RCEME flag was formally dedicated and hung in Trinity Chapel, Fort Henry Heights. The flag, along with the flags of other Corps represented in CFB Kingston, will continue to hang in the chapel.

The annual Drumhead Service was conducted on the parade square at 1400 hrs. Once again the weather was perfect and many families and friends attended the colourful ceremony. The drums and bugles of the RCEME School under the direction of WO2 Monkman performed admirably.

The Commandant, Colonel AL Maclean, in his address to all ranks announced that Milton Barracks commonly called "Barriefield Camp" has been officially renamed "McNaughton Barracks" in honour of the late General, the Honorable AGL McNaughton, Honorary Colonel of the Corps from 1946 to 1949, Honorary Colonel Commandant from 1949 to 1962 and Colonel Commandant from 1962 to 1964.

Following the Drumhead Service, tea was served in the various messes.

Thus completed a weekend of festivities marking the 23rd Birthday of the Corps.



Canadian flag is draped over the piled
Canadian flag is draped over the piled drums during the Drumhead Service.

Commodore Timbrell inspects 3 Platoon accompanied by Colonel Maclean, Major AJ MacGillivray and Lieutenant LP Siwik.

(See also page 25)

NCOs of Vehicle Company gather round the fountain at the Sergeants' Mess Ball.

Cmdr Timbrell and Cpl Riddell cut the birthday cake at the Junior Ranks' Club Ball.

Partygoers at the Stag Party in the Drill Hall celebrate the 23rd Birthday.

Sgt Swain with entertainers at the Stag Party

Ssgt Davidson leads the RCEME School Band in the March Past following the Drumhead Services.

Lieutenant CN Sochasky leads 6 Platoon in March Past in column of route.

AN ADVENTURE
FOR APPRENTICES

EXERCISE "HOME RUN"

On 3 Jul 66 Apprentice Company of the RCEME School departed MILTON BARRACKS for a "date with destiny" on crown lands 100 miles north of Kingston. As the Exercise will be repeated this year the sequence of events of the 1966 exercise follows for your edification and amazement.

The apprentices were divided into two platoons and transported to two drop-off points in DND transport. Their task was to move across country on foot and locate a very valuable piece of equipment. The first platoon to locate the equipment was to defend it until help arrived. The second platoon to arrive was to attack and endeavour to capture the equipment and hold it until help arrived.

The country over which the apprentices had to travel is wild country. It is almost a solid mass of virgin forest plentifully dotted with lakes, streams and swamps. In July the deer flies are not too bad but the mosquitoes are out in full force. The hills are not high but they are steep. The heat on the valley floor is oppressive. There are no roads or tracks. Dead trees and scrub are barriers between the upright trees. There is no easy way. Every foot has to be cut with a machette.

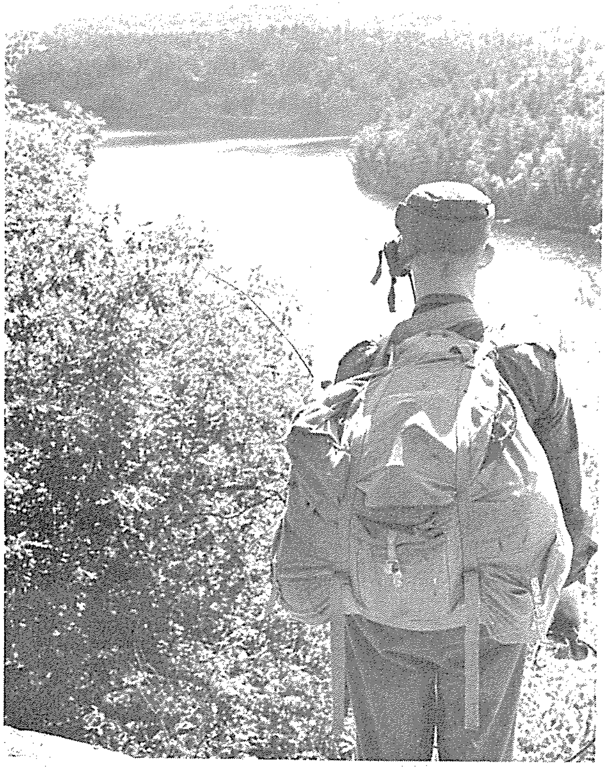
Into this mess went 90 apprentice soldiers with all their necessities including rations for three days. Many of us have had to do something like this in our lives but not many do it when they are 17 or 18 years of age.

You would have been proud of them.

They read their maps correctly - most of the time; they were experts with the compass; could cross creeks and swamps as if they had lived half their lives in the bush; cooked their rations, washed their socks, cleaned their weapons and fought mosquitoes like veterans.

And when they finally emerged from the bush, stinking like swamp rats and covered with mosquito bites, there was a swagger in their walk and a lift in their chin that wasn't there three days previously.

Our apprentices had grown up!



THE VALUE ANALYSIS TECHNIQUE

BY

MAJOR R PETERS CD

Management has been identified as being more akin to an art than a science.. However, with the increased number of managerial techniques being developed this gap is narrowing. In this modern competitive world today's manager (if he is to remain a manager) would be less than prudent in not keeping abreast of the current techniques and fully utilizing them.

One of these recent developments in this field of managerial aids is "value analysis". Value analysis can be defined as the critical and systematic examination of a product or service with a view to eliminating all unnecessary elements without the loss of function. It follows then that value analysis results - by consideration of the relationships between design, production and customer needs - in the evolvement of a better product at a lower cost. The thread connecting these considerations is value.

For the purpose of value analysis the four concepts of value are:

> Exchange Value - The limit at which it is desirable to discard an item rather than repair it.
>
> Cost Value - The actual cost of placing a product or service in the hands of a customer.
>
> Esteem Value - That item characteristic which makes a customer desire possession of it.
>
> Use Value - The ability of an item to perform its function with reliability.

It is recognized that no one individual possesses all the expertise for the examination of all value concepts; therefore, a representative from each department concerned with the end item production forms part of a team. Team work, therefore, is the accepted method of applying value analysis in an organization. The efforts of this team may be directed to improving existing products and services or launching new ones. Of most concern is the maintaining of 'use value' and obtaining the required functional reliability at minimum cost; and at the same time retaining the minimum esteem value acceptable to the customer. Value analysis relies upon fostering meaningful co-operation among the individual team members and, in addition, the retention of an objective point of view.

In order to obtain the maximum results from the use of value analysis, a systematic and logical approach must be planned. To satisfy this requirement, the mechanics of value analysis technique can be divided into six categories or stages and the following sequence is used.

Selection

The choice of items or services to be examined is of prime importance since this is the focal point of the analysis and determines from which departments the team members should be drawn. Attention must be paid to obtaining maximum return for team time expended.

Consideration must, at this point, be directed to quantity, cost and status with respect to the stage of design and/or production of the items or services. Application of value analysis to the items or services of highest cost, largest quantity and at the earliest stage of design and/or production will produce the most savings.

Obtain Related Facts And Define Function

Complete pertinent information concerning the item under study should be collected. Specifications, design criteria, production methods, quantity and cost, as well as all other relevant facts must be obtained. The basic function of the item may now be defined and consists of a short concise statement containing a verb and a noun. It is that function which, if removed, would render all other functions redundant.

There is, of course, no implication that secondary functions are unnecessary to performance as a whole. For example, the basic function of a school staff is - train students. A secondary function of this staff is - maintain records. However, remove the training requirement and the need for maintaining records does not remain.

In a similar vein, a pen - makes marks; and secondly - contains ink. If the function of making marks disappears so does the requirement to contain ink.

All portions and parts of the subject under study are subjected to the functional definition and tabulated.

CRITICAL EXAMINATION

Ruthless challenging of function in relation to end item need will now expose unnecessary elements. The WHAT, WHY, WHEN, WHERE, WHO, and HOW questions of Method Study will point up unnecessary performance, installation, maintenance and repair frills not in accordance with customer needs. It is useful at this point to determine the relative importance of criteria pertaining to the end item. Consideration of the following is an essential minimum:

a. Ease of production

b. Size and weight

c. Ease of installation and maintenance

d. Reliability

e. Operator safety

f. Appearance

The relationship between the criteria is established as:

a. Essential

b. Very important

c. Important

d. Desirable

e. Not necessary

Tabulation of this relationship can take the form of a Comparison Matrix as shown below. The criteria is assigned as numerical weight and the item rated accordingly.

DETERMINATION OF ALTERNATIVES

The determination of alternatives represents the creative phase of value analysis. Since the function of each part or component has been established, other ways of providing these functions can now be explored. Consideration of combining functions of parts or components, the use of alternate production methods or materials, parts standardization, redesign of parts or components and other conventional cost reducing techniques can be contemplated. At this stage free rein must be given to imaginative thinking, to all members of the value analysis team. Importance is placed on the suppression of personal bias or prejudices. Once the alternatives have been isolated they are listed, evaluated and costed.

ASSESSING ALTERNATIVES

The complete list of alternatives can now be exposed to the Critical Examination stage of the value analysis sequence. The results tabulated, as were the basic or original design, on the Comparison Matrix form shown.

The part or component which has the highest numerical score will emerge as the one which has true value; ie, provides the required function at minimum cost. It also follows that the synthesis of all the selected alternative parts or components will provide the true value of the item or service under study.

REPORTING RECOMMENDATIONS

It is a well known fact that all people resist change to some degree. The final report must be complete, since it is the vehicle for selling higher management the ideas of the value analysis team. Specifications, drawings and costing detail must all be there. No recommendation is complete without an indication of expected savings.

Value analysis is not in itself a panacea for all modern management ills. Prudent use of it does, however, add another powerful weapon to the armory of management techniques for employment against rising costs and inefficiency.

The Bones of an Organization

THE WISHBONES
. . . who spend all their time wishing somebody else would do all the work.

THE JAWBONES
. . . who do all the talking but very little else.

THE KNUCKLEBONES
. . . who knock everything that everybody else tries to do.

FINALLY, THE BACKBONES
. . . who get under the load and do the work.

VALUE ANALYSIS TECHNIQUE (from previous page)

COMPARISON MATRIX

CRITERIA		Ease of Production	Size and Weight	Ease of Installation and Maintenance	Reliability	Operator Safety	Appearance	TOTAL SCORE
Criteria Relationship		VI	VI	I	E	E	D	
Criteria Weight		6	6	4	8	8	2	
Design "A"	Score	24	12	12	24	8	4	84
	Rating Weight	VG 4	F 2	G 3	G 3	P 1	F 2	
Design "B"	Score	30	6	12	32	24	4	108
	Rating Weight	E 5	P 1	G 3	VG 4	G 3	F 2	

NOTE: Score = Criteria Weight x Rating Weight

WEIGHT TABLE

Criteria		
Essential	(E)	- 8
Very Important	(VI)	- 6
Important	(I)	- 4
Desirable	(D)	- 2

Rating	
Excellent	- 5
Very Good	- 4
Good	- 3
Fair	- 2
Poor	- 1

CORPS BIRTHDAY

CFB PETAWAWA ONT

The RCEME units from Base Petawawa held what could be called a very successful and enjoyable twenty-third birthday party. As in other years it was a meeting place for friends both civilian and military.

Many of the original 1944 RCEME personnel were in attendance as seen in the pictures below. Included was the youngest member of the RCEME Corps in Base Petawawa at the birthday. The names of those present are WO1 Meloche, WO1 MacIlray, Ssgt Tetloch, Cpl Clark, Sgt Dunkeld, WO2 Couglin, Sgt Sisson, WO2 MacLaughlin, Cpl Barker and Cfn MacFarlane, the youngest. In the second picture, the mascot Mr. EME, the mule, was handled ably by Cpl Dobson and Maj Geary and in the course of the evening by several others.

Speech making was cut down to a minimum but the Base Maintenance Officer did however have the opportunity to thank all the RCEME contingents from the numerous units in the Base for their support and cooperation.

WO1 J. B. Meloche was presented with a sketch of a typical RCEME scene by all RCEME personnel in Base Petawawa. The sketch was ably created by Sgt Frank Street from 2 Fd Wksp SPSS.

A very special thanks goes out to all those gallant people who helped to decorate the hall, plan the entertainment and the numerous other details in the organization of a party of this magnitude.

Needless to say a good time was had by all.

RML 9 PDR REBUILT

Late in 1966 4 RCHA was informed that the unit would be firing the "Noon Gun" daily at the Canadian Pavilion at Expo 67 in Montreal. The detachment of one sergeant and eleven bombardiers and gunners (including spares) is to be suitably attired in RCHA full dress uniforms. The gun designated is a Rifled Muzzle Loading 9 Pdr Mk II belonging to the regiment. This gun has been displayed over the years at many artillery functions. Normally it holds a place of honour in the foyer of Regimental Headquarters building (P114). It should be noted that guns of this type were used by Canadian artillerymen of A and B Batteries (now part of 1 RCHA presently serving in Germany) in the North West Rebellion of 1885.

This particular gun was acquired by 4 RCHA as a museum piece in 1955. It was first restored at 209 Workshop RCEME here in Petawawa the same year. A plaque engraved with the names of those responsible for the restoration was at that time mounted on the gun.

This year, after 12 years' service, the gun required an extensive overhaul to bring it a standard commensurate with service at Expo 67 where it will come under the eyes of the millions expected to attend.

The restoration of the gun fell to Base Maintenance Section CFB Petawawa under the command of Major CR Morgan. Since a gun of this vintage is a rarity in their weapons section, the challenging task was adopted by all as their centennial project. The gun is now refurbished and the work is a credit to Base Maintenance Section.

The gun now bears another plaque engraved with the names of the personnel of Base Maintenance Section who did the 1967 restoration.

The plaque reads:

CARRIAGE FIELD RML 9 PDR
MK II REBUILT AT BASE
MAINT CFB PETAWAWA
1967

WEAPONS SECTION

S/Sgt COLE GN
Cpl ANDERSON JC
Cpl McLAREN MR
Cfn LEMIEUX JRG

PAINT SHOP

Mr NJ DUREPEAU
Mr RJ KATHEN

CARPENTER SHOP

Mr ALEX BEHNKE*
Mr A WHITEHEAD
Mr AG HAMPEL*

METALS SHOP

Mr VF HAMMEL
Mr EC PITZNER*

MACHINE SHOP

Cpl COSSABOOM JM

WHEELWRIGHT

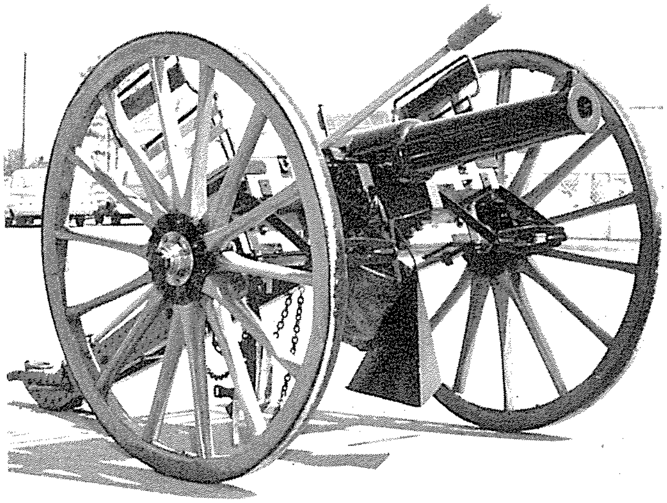
Mr WM PILATSKE

INSTRUMENT SHOP

Cfn HOLMES JR

It is interesting to note that the three names marked (*) appear on the 1955 plaque.

The Commanding Officer and all ranks of 4 RCHA would like to thank all personnel of Base Maintenance Section on a centennial project well done.



M113A1 HULL REPAIR

An M113A1 APC was received by 27 COD Workshop Branch with damage to the hull adjacent to the right front final drive. The track and final drive were removed and the problem appraised. The following procedure was used to make the repair.

The two damaged Rosan inserts were removed and the holes chamfered out with an electric power chisel.

A 1 1/2 inch thick aluminum block was shaped to conform to the upper part of the hull final drive opening. A large hydraulic jack was positioned so that the base was on the conforming block and the ram was on the 'dented in' part of the damage. Jack used here was Press, Hydraulic 3442-21-109-0735. (71 - ton push) A regular 10-ton Porto Power was placed between the final drive hull housings on the front of the vehicle and pressure was exerted (Figure 3).

The dent was forced back to its original position. A 10-lb sledge was used above and below the dent to assist the metal movement. The jacks were then removed.

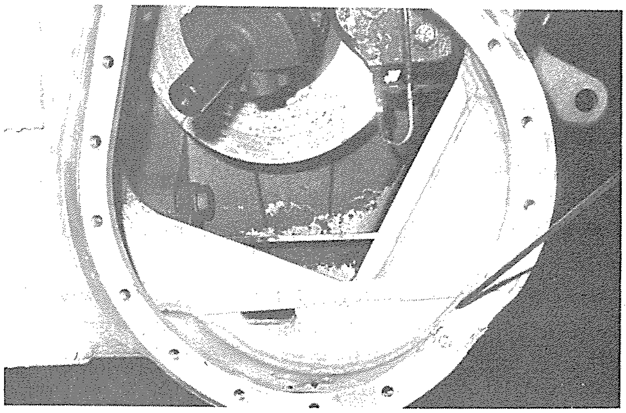
Metal in the damaged area was heated to about 500°F and the insert holes filled with the MIG welder. The outside front of the housing had been abraded away to a depth of about 1/2 inch. This was filled in. All welds were smoothed with the disc sander to their original shape. Welding wire used was # 5356.

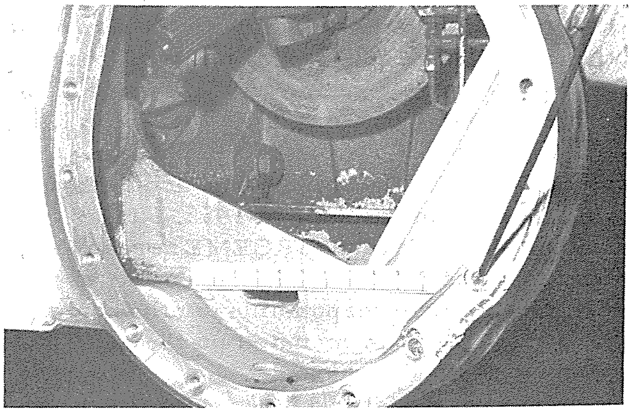
The final-drive hull mating surface was found to be uneven. This was built up with weld and filed off until the irregularities were less than .008 inch. See Figure 4. Original size inserts were used for replacement. These are 1/2 inch UNF in ID and 3/4 inch UNC in OD. As no special tools are available for this size, ordinary drills and taps were used. Loctite was applied to ensure that the inserts remain in place.

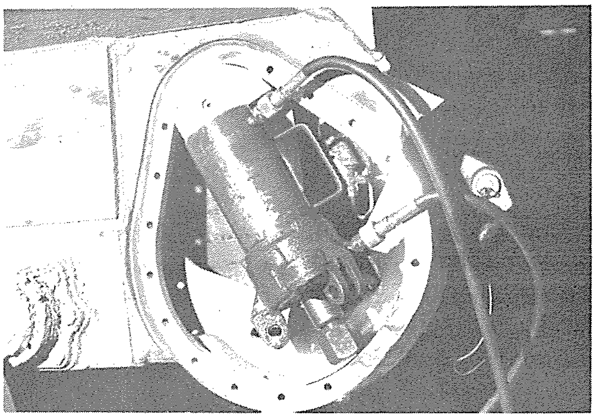
Bare metal parts were coated with zinc chromate primer and painted.

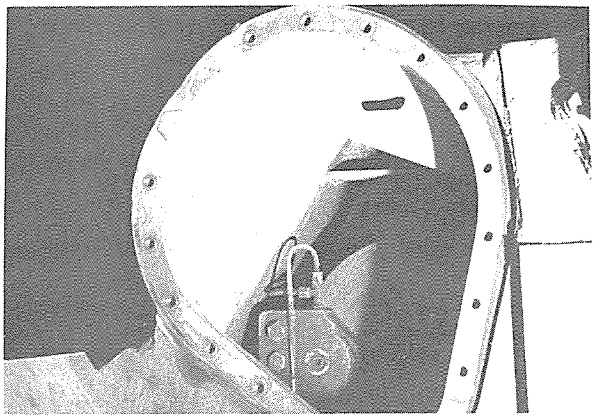
Caulking compound was applied to the mating surfaces and the final drive was bolted and torqued on.

The track was put on, lubrication checked and the vehicle was operational.









Fuel Cells

By Major T. J. R. Miles, M. A.
A. M. I. E. R. E., ptsc, ee., REME

INTRODUCTION

A fuel cell is a device which converts the chemical energy of a fuel directly into electrical energy. The theory of the fuel cell is not new. In 1839 Sir William Grove experimented with a fuel cell using platinum catalyzed electrodes through which hydrogen and oxygen were combined. However it was not until 1959, when F. T. Bacon demonstrated his hydrogen-oxygen fuel cell system, that a useful fuel cell battery was produced; it delivered a power of 6 kW.

The fuel cell owes much of its subsequent development to the special requirements of the United States space program. Their use in space vehicles has been widely publicized, but for other applications fuel cells are still in the experimental stage.

Its characteristics of high efficiency, good power to weight and volume ratios, silent operation and good reliability, make it a strong contender as a future replacement for conventional batteries and generators.

Looking further into the future the fuel cell might well be used to power electrically driven vehicles. Their use on a wide scale to power army equipments could greatly reduce fuel supply problems and might even make feasible the use of nuclear energy for field units.

Principles

The principles are best understood by considering the hydrogen oxygen fuel cell. Its overall reaction is simply a reversal of the well known process in which hydrogen and oxygen are formed by the electrolysis of water:

$$\text{Hydrogen} + \text{Oxygen} = \text{Water} + \text{Electrons}$$
$$2H_2 + O_2 = 2H_2O + 4\bar{e}$$

The basic construction of the hydrogen oxygen fuel cell is simple as may be seen from Fig 1. It comprises two electrodes which are separated by an electrolyte. The fuel, which in this cell is gaseous hydrogen, is fed to the outside of the anode electrode. The oxidant, gasous oxygen, is fed to the outside of the cathode.

If the electrodes are not connected to a load, then hydrogen and oxygen will be used by the cell until a state of equilibrium, corresponding to maximum cell potential, is reached. To understand how the electrode potentials are achieved consider the anode and cathode reactions separately.

The anode is porous and activated in such a way that free hydrogen atoms appear on the inside surface of the electrode at the junction with the electrolyte. Each hydrogen atom can produce a positively charged hydrogen ion (H+), which may escape into the electrolyte thus leaving an excess electron on the anode.

A typical electrolyte is potassium hydroxide which in solution breaks down into positively charged potassium ions (K+) and negatively charged hydroxyl ions (OH-). The negative hydroxyl ions have a strong affinity for the anode and together they form water. The electrochemical reactions for the anode are shown in Fig 2.

As these reactions continue a potential difference is built up between the anode and the electrolyte. The anode becoming more negative due to the excess electrons and the electrolyte more positive due to the excess potassium ions. This potential opposes, and eventually is large enough to prevent, the further escape of hydrogen ions from the anode. At this point the anode reaches a maximum negative potential.

At the cathode, oxygen collects free electrons and thus escapes into the electrolyte as doubly negative charged oxygen ions (O--). These ions combine with the water in the electrolyte to form hydroxyl ions. The reactions are shown in Fig 3. When there are no more free electrons on the cathode the reactions cease and the cathode will have reached a maximum positive potential.

If a load is now connected between the electrodes, electrons will flow from the anode through the load to the cathode. The anode and cathode reactions will recommence and hydrogen and oxygen will be used by the cell to maintain the electrode potentials. The hydrogen ions from the anode will combine with the hydroxyl ions formed by the cathode reactions to give an overall excess of water in the electrolyte. Provision must be made to remove this exhaust product from the cell.

The theoretical potential difference between electrodes for a hydrogen cell is 1.2 volts, but in practice polarization reduces this to about 1 volt. Clearly, higher voltages can be achieved by connecting a number of cells in series to make a battery or fuel cell stack, as may been seen in Fig 4, which shows a 1 kW hydrogen oxygen cell for use in space. The current that can be delivered by a cell depends upon the rate at which fuel and oxidant can be supplied, and upon the electrode size.

TYPE OF CELL

Electrochemical reactions similar in principle to those for hydrogen and oxygen are theoretically feasible for many other fuels and oxidants. Instead of hydrogen, fuels may be chosen for example from methane, propane, carbon, ammonia or sodium. The oxidant may be found from hydrogen peroxide or even air. The design of the cell, and the choice of electrolyte, will vary to suit the fuel and oxidant to be used.

Fuel cells tend to be classified into two groups, low and high temperature. At present all practicable cells come from the low temperature group, that is, ones which work at temperatures below 300°C. The hydrogen-oxygen cell comes from this group.

Low temperature cells at present require electrodes which must be activated with expensive catalysts, such as platinum, to promote the necessary electrochemical reactions. Their electrolytes are often aqueous solutions, causing two design problems. Firstly, the pressure within the cell must be high enough to prevent excessive evaporation of water at the operating temperature. Secondly the electrodes, which must be porous to the fuel and oxidant, must nevertheless not allow the liquid electrolyte to leak away.

Fuel for the low temperature cells tend to be expensive or difficult to manage. For example, hydrogen must be stored in heavy containers. This problem can be overcome by using a more manageable fuel such as methanol which is 'reformed' to give hydrogen as required by the cell, a process which adds considerably to the complexity of the fuel cell system. A liquid fuel that is used in low temperature cells, and that can be handled like petrol, is hydrazine hydrate, but is too expensive at present for general use.

A most attractive fuel would be a cheap hydrocarbon distillate, such as petrol. The present indications are that such fuels might be usable in high temperature cells. These cells, operating in the temperature range from 400°C to 1000°C, use electrolytes such as solid oxides or molten carbonates. Although in the experimental stage, they promise to use cheaper catalysts and fuels than the low temperature cells. A drawback is their slow start up since energy must be fed to the cell to bring it up to the high operating temperature.

Fuel cells operate at a high efficiency compared with other energy conversion devices, most of which suffer from the inefficient conversion of thermal energy. A comparison of efficiencies for various conversion devices is shown at Fig 5.

Figures 6 and 7 illustrate that the fuel cell has a better power to weight and a better power to volume ratio than the equivalent engine generator set. It should be noted that it is only for discharge times of more than about 10 hours that the fuel cell system becomes lighter and smaller than conventional batteries.

Non-toxic exhaust and silent operation are general characteristics claimed for fuel cells, though this is not always true since the exhaust could be toxic with certain fuels. The cell control system usually comprises fuel and coolant pumps which can be noisy.

A high reliability is predicted for the components within the cell, but the overall reliability will depend upon the devices which make up the control system.

At this stage in development it is not possible to predict the cost of fuel cells, but it does seem that it will largely depend upon the types of catalyst that can be used for activation.

APPLICATIONS

Replacement of Conventional Batteries

For tasks where lightweight manportable electric sources are required to operate quietly and continuously over long periods, such as an infantry radar or inaccessible radio relay stations, the fuel cell may well replace conventional batteries. An important advantage of the fuel cell in this role is the speed and ease with which it is recharged; merely pour in more fuel or perhaps insert a fresh fuel pack. Recharging conventional batteries may take several hours assuming that a generator is available and its noise acceptable.

The United States Army has already interested itself in a lightweight, air-breathing, fuel cell to power forward-area electronic equipment. Development models would be expected to deliver 720 watt-hours (60 watts for 12 hours) on a single 2 pound fuelling. A final model will weigh 10 pounds and occupy less than 1 cubic foot. As might be expected its fuel is hydrazine.

Replacement of Conventional Generators

Hydrazine is expensive, and the wide use of fuel cells to replace internal combustion engined generators will depend upon the sucessful development of a cell which will work with a cheap fuel. Nevertheless there are tasks which necessitate the use of expensively silenced generators, which might be more economically performed by fuel cells.

The development of a fuel cell using a cheap fuel may not be so far off. It is worth noting a recent report of a cell designed by Pratt and Whitney Aircraft which works on natural gas and air. At a time when this country expects to benefit from large deposits of natural gas, such fuel cells might come into general use. More important from a military viewpoint is the report that the Pratt and Whitney cell would also work off fuels such as petrol and kerosene.

Fuel Cell Powered Vehicles

A study of the design problems associated with the use of fuel cells to power electrically driven vehicles is beyond the scope of this article. It is sufficient to mention some of the advantages that a fuel cell vehicle might offer over the internal combustion engined vehicle.

The absence of reciprocating parts in the fuel cell vehicle leads to less maintenance and greater reliability. The electric drive is quieter, gives more flexible control and enables ideal torque speed characteristics to be developed, especially necessary for good cross-country performance. The fuel cell vehicle is likely to have a non-toxic exhaust, which is important for civilian applications. Battlefield detection by infra-red emission may be avoided by using ambient temperature cells. Electric power take-off is available with each vehicle, and so the need for separate generators disappears. Perhaps the most significant advantage comes from the cell's high efficiency and the resultant improved fuel consumption. It is predicted that at low speeds, about 30 mph, the fuel consumption of a 300 bhp fuel cell powered vehicle will be less than half that of an equivalent internal combustion engined vehicle.

For these advantages to be realized, suitable light-weight fuel cells, electric motors, and transmission units have still to be developed.

It is worth noting the known progress to date. Allis Chalmers, an American firm, has built several experimental fuel cell powered vehicles; a tractor, a fork lift truck, and a golf cart powered by a 3 kW hydrazine cell.

Allis Chalmers has also fitted a hydrazine cell to propel a one-man submarine. This application is particularly interesting since on a large scale fuel cells may challenge nuclear reactors for submarine propulsion. Nuclear submarines suffer the risk of detection from the noise emitted by the cooling system of the reactor which cannot be shut down quickly. A fuel cell driven submarine does not suffer from this limitation. If silent conditions are needed, the fuel cell can be immediately switched off. Fuel cell units of 200 kW are now being developed in Sweden for submarine propulsion.

Use of Nuclear Energy

A relatively small nuclear reactor could meet the total energy demands of an army in the field. The problem is how to deliver the energy produced by the reactor to the widely dispersed and mobile users.

One concept that might overcome this problem is to use the nuclear energy centrally to convert locally available raw materials into transportable fuels. Water, if available, could be used to give hydrogen and oxygen by electrolysis and these gases could then be liquified. Alternatively, liquid ammonia could be produced from hydrogen and nitrogen extracted from the air by liquefaction. Fuels such as hydrogen and ammonia can be most efficiently used by fuel cell systems. Army field units with fuel cell powered equipment could by this concept operate for long periods independent of outside fuel supplies.

CONCLUSION

In view of the rapid development of the fuel cell to date it would be unwise to dismiss lightly the possibility of fuel cells being developed for the most ambitious applications. A break through in fuel cell development could have significant effects upon the concept and design of Army equipments.

ACKNOWLEDGEMENT

The author's acknowledgement is due to the Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin, for their kind consent to reproduce photographs of some fuel cell applications.

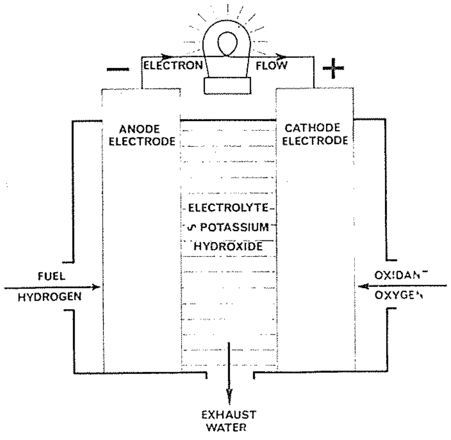


Figure 1 - Basic Construction of Fuel Cell

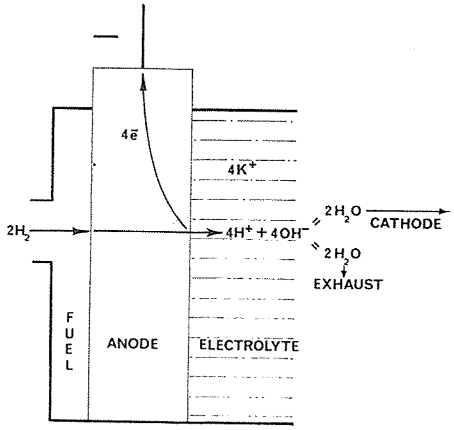


Figure 2 - Anode Reactions

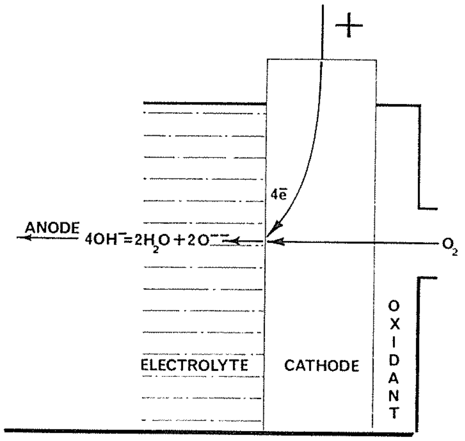


Figure 3 - Cathode Reactions

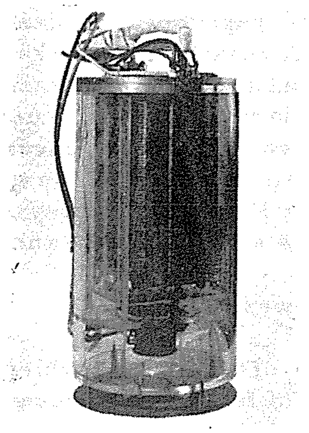


Figure 4 - Allis Chalmers 1 kW Cell

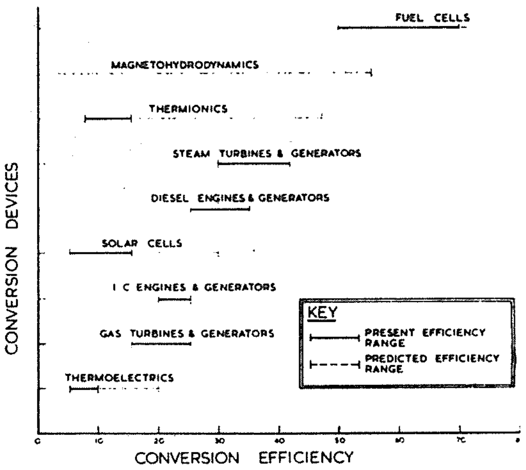


Figure 5 - Comparative Conversion Efficiencies

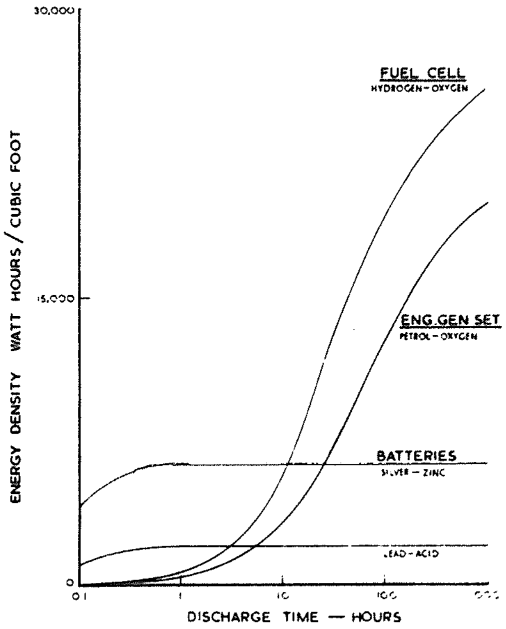


Figure 7 - Power to Volume Ratios

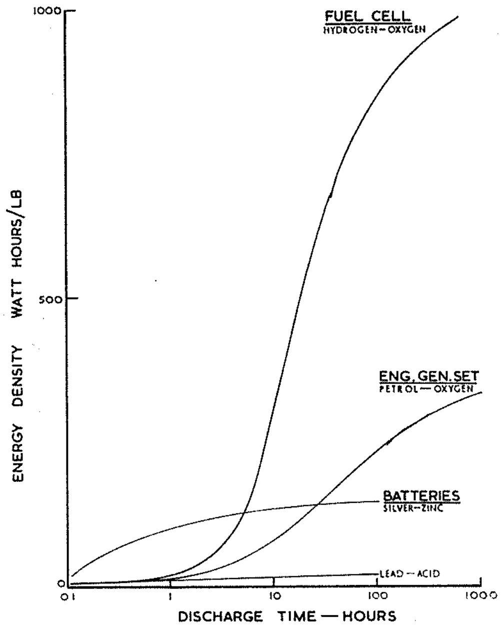
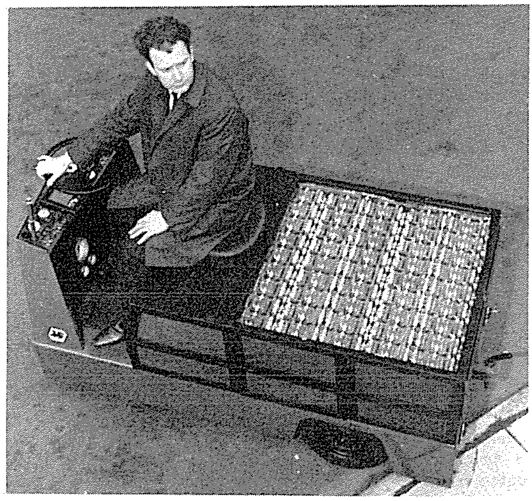


Figure 6 - Power to Weight Ratios



An Experimental Electrovan with a Hydrogen/Oxygen Fuel Cell

—Reprinted from the Journal of the Royal Electrical and Mechanical Engineers

WAYS TO TEST, SERVICE AND REPLACE DIODES

Here's an article that takes the guesswork out of work on alternators, current regulators and transistorized ignition

BY WILLIAM J. MORELAND

Technical Editor of MOTOR

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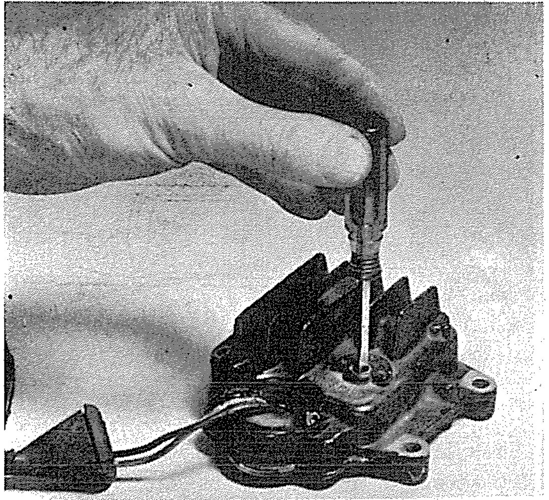
from MOTOR

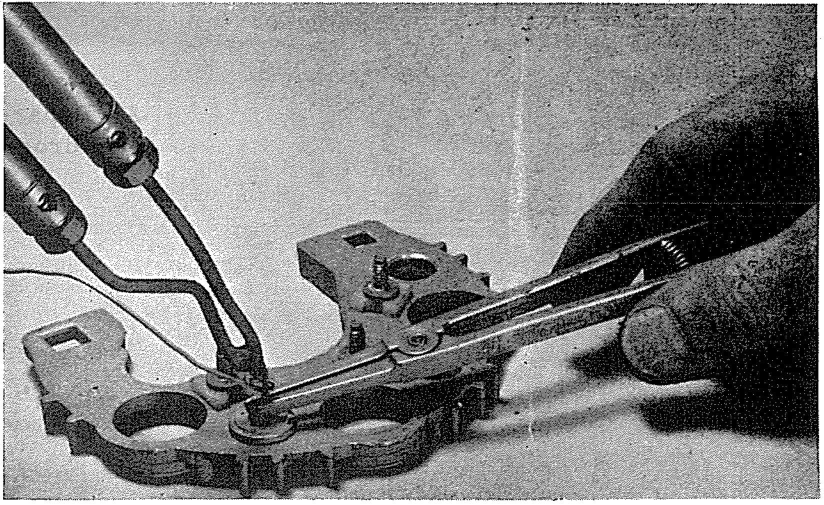
Despite the increasing use of diodes and transistors in today's cars and the widespread interest in the devices that use them, knowledge of them in the service field is not crystal clear. Proper service of alternators, regulators and transistorized ignition systems demands more than a bowing acquaintance with diodes.

Alternators have supplanted the generator, and transistorized ignition systems and regulators are growing in favor. All these use diodes, so testing and servicing these electronic marvels depends upon a shop's familiarity with them and with their workings.

The new charging and ignition systems work on the same principles as the old ones.



After plug has been taken out, Delco transistorized regulator is adjusted by turning adjustment screw



Diode is protected from excessive heat when soldering connection by attaching tool to diode wire

But in the old systems the commutators and contacts were trouble spots. They could handle only a limited amount of current, and the heat from arcing caused them to deteriorate. The new electronic devices, on the other hand, have no moving parts, they can handle more current, and there is no arcing.

The diodes on alternators, like the commutators on generators, are one-way electrical check valves which allow current to flow in one direction and prevent it from flowing in the opposite direction. The diodes can be tested with a suitable ohmmeter with testers that are available for this purpose, or with a test light.

To make an ohmmeter test, use an instrument that has a 1 1/2-volt cell. This can be checked by turning the selector to the lowest range scale and connecting a voltmeter to the ohmmeter leads. The voltmeter will indicate the voltage of the cell.

The diodes in the heat sink are checked with the stator disconnected. With the selector turned to the lowest scale, connect one ohmmeter lead to the heat sink and the other to a diode lead. After noting the reading, reverse the ohmmeter leads and take another reading. If both readings are the same, either very high or very low, the diode is defective.

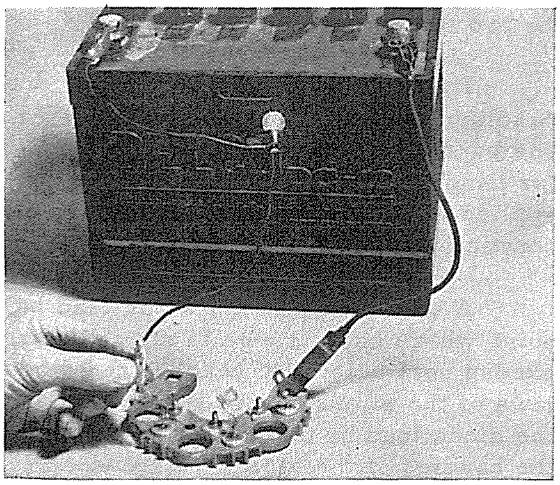
A good diode will give one low reading and one high reading when the leads are reversed. Check the other two diodes in the heat sink in the same manner as the first.

To check the diodes in the end frame, connect one test lead to the frame, and then follow the same procedure as for the heat sink.

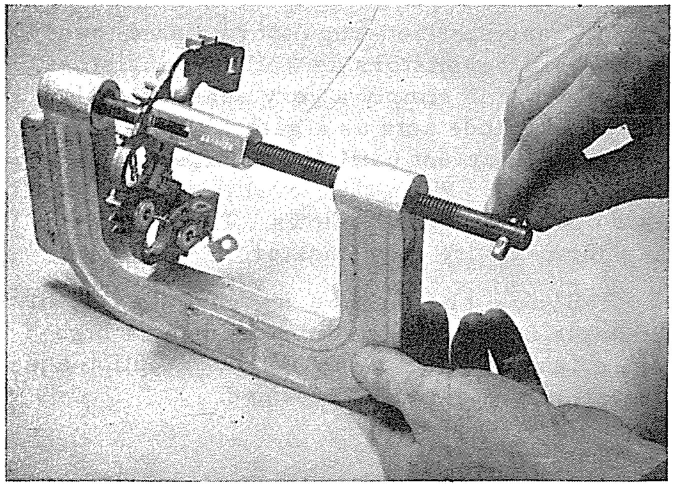
When using one of the special testers available for making diode tests, follow the instructions of the manufacturer.

A test lamp of not more than 12 volts can be used as an alternate method of checking the diodes. Do not use a 110-volt test lamp for this purpose.

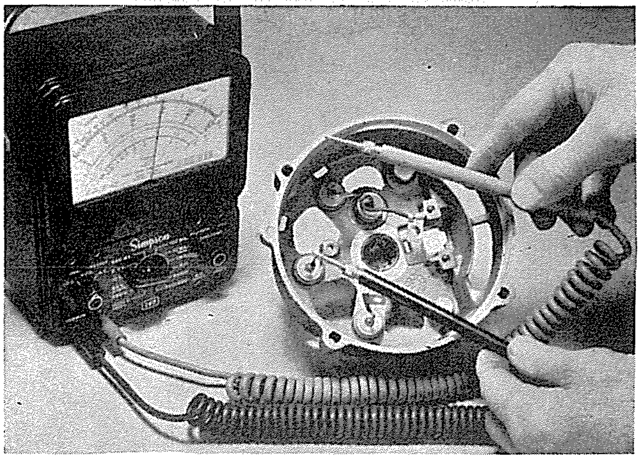
Connect the test-lamp leads first in one direction and then in the reverse direction, in the same manner as for the ohmmeter test. If the lamp lights on both checks, or fails to light on either check, the diode is defective. With



Diode test can also be made with 12-volt test lamp. Here, diode in heat sink is checked out



Diodes must be pressed, not hammered, in and out of place. Tool shown does job quickly and easily



Ohmmeter test is made by touching one lead to diode wire, other lead to housing, then reversing a good diode the lamp will light on only one of the two tests.

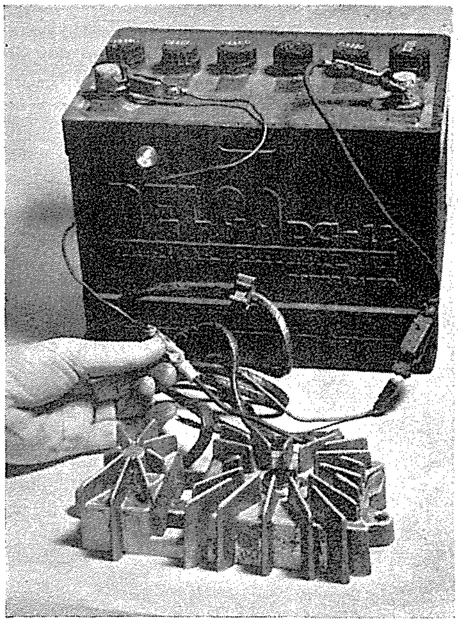
Diodes can be damaged by improper handling. Do not attempt to remove or install one by striking it. Special tools are available for handling these units. Excessive heat applied while soldering or unsoldering a diode connection will also damage the unit.

A clamp or pliers on the lead below the point where heat is applied will absorb the excess heat before it reaches the diode. The jaws of the pliers can be kept in contact with the diode lead by using a rubber band around the handles of the tool.

Acts as a Gate

Transistorized regulators have zener diodes and thermistors as well as transistors. A transistor is simply a very sensitive relay. The zener diode acts as a gate which shuts off the flow of current until the voltage rises to a certain level. When this level is reached, the gate opens and current flows. The thermistor is a temperature compensator.

Since there are no moving parts or contacts in these electronic devices, a higher frequency of field current interruption and smoother regulation is obtained.



Here, amplifier on Leece-Neville transistorized ignition is being checked out by use of test lamp

Transistorized regulators are easily identified on Ford-built cars by their low, rectangular shapes. On General Motors cars, the covers have high fins.

Parts Not Replaceable

The parts in these units are not replaceable, but the units can be adjusted. If the other components in the charging system check out, the connections are secure, and the regulator does not respond to an adjustment, the regulator should be replaced.

The adjustment on General Motors units can be made on the car by removing the threaded plug in the cover with a small Allen wrench. Insert a small screwdriver into the slot and turn clockwise to raise the voltage setting, or counter-clockwise to lower it. Each notch moved will change the setting .3 volt.

To adjust a Ford transistorized regulator, bring it up to operating temperature while still in place. Then remove the mounting screws and take off the bottom cover on the regulator. This will expose a slotted screw on a 40-ohm adjustable resistor located in a corner between a 140-ohm resistor and a capacitor. Use a fiber rod as a screwdriver to turn the screw and change the voltage setting.

A transistorized ignition system remedies, in various ways, the shortcomings of the distributor points in a conventional system. One of the shortcomings, deterioration from arcing, is eliminated by using the points only to trigger a transistor which carries the current load. The other problem, the mechanical limitations of this type switch at high speeds, is corrected by eliminating the points and using a pulse-type generator to trigger the transistor.

While more than 80 transistorized systems of one type or another have been introduced, there are relatively few cars equipped with them. Current factory installations are around 1 per cent. The electronic parts are usually sealed in the amplifier unit and the assembly is replaced if one of its components is inoperative.

Test Follows Pattern

Test procedures vary with the various

(continued on page 25)

Address your letters to
Sgt O'Sweat, care of the
Editor RCEME Technical
Bulletin, McNaughton
Barracks, Kingston, Ont

SORRY! THE SERGEANT HAS BEEN BUSY MOVING TO KINGSTON.

The front door of the RCEME School Sereants' Mess decorated for the 23rd Corps Birthday. Decor by WO2 WWB Monkman. Corps' colors were used in the Centennial for the decorations within the Mess.

(TESTING DIODES from page 24)

makes but follow a pattern of isolating the trouble. A simple procedure is to remove the wire from the center tower on the distributor, hold the end 1/4 in. from a ground, turn on the ignition switch, and crank the engine. If a good spark jumps the gap, the trouble is in the cap, rotor, spark plug wires, or spark plugs.

With no spark, or a weak spark, check the distributor points, ballast resistor, ignition switch and other parts of the primary. If this part of the circuit checks out, the trouble, by the process of elimination, would lie in the coil or the electronic components. If separate, check the coil. Where both are sealed in an assembly, replace the unit.

SPANNER SPEAKS

The big news around here this week is all about our village deployment scheme held last week. Planned by our Training Officer, Capt Simms, it involved the entire unit, less FRP (Forward Repair Platoon) setting up in a small village overnight; then moving to another village for the next night. Great care was taken by all concerned to ensure that no damage was done to civilian property and relations with the locals were very good throughout the exercise.

A highlight of the scheme was the Road Rally held during the second day out. Organizers were Cpls Atkinson and Gates and Cfn Sharman, three of our unit's contributions to the Brigade Sports Car Club. The effort was won by Cpl Beggs and Cfn Kolodychuk, driving a 3/4 ton from Aircraft Platoon. Runners up, Sgt Hayashi and Pte Vandergiessen of RCOC Platoon were driving a fully loaded 2 1/2 ton spare parts truck. Both the organizers and the competitors are to be congratulated for a job well done.

While this exercise was going on, the fighting FRP was in Soltau, supporting the Armour and Artillery, as well as other members of the Brigade using the Hohne and Trauen ranges. They were beefed up by additions from other sections, including two of our ever-valuable cooks, a parts man, and a weapons team. While the last named was not too busy, their lullaby voices added a great deal to platoon sing-songs during the long, lonely nights.

Both schemes proved very valuable in many ways apart from their training value. First, they reminded us how cold it can be under canvas in the German spring. Second, they gave us a chance to get away from the old woman for a couple of days. Third, they gave us a lot of laughs. Finally, they gave us an excuse for a party or two. There's just a certain something about sitting around a warm Gasthof while the cold night-wind whistles outside, listening to the inspired plucking of the FRP Protest Singers' guitars and the clear, bell-like notes of the assembled multitudes raised in joyful chorus; praising (generally) the Waters of Bras D'Or; that makes everything worthwhile! Every now and then we even manage to get some work done.

To close this week, we would like to congratulate five of our people who are graduating from the Brigade Junior NCO school. The five, Ptes Timmons and Russell, and Cfn Durie, Searle and Palardy, should soon be sporting new stripes to go with their recently earned qualifications. We're mighty proud of them. Also, congratulations to our three surviving subalterns who next week are elevated to management rank. Mr Fischer and Mr Fyfe become captains on Monday, as does Lt Hanson on Tuesday. They claim that this will leave no one to do the work around the unit, such as boards, summaries, etc., etc., so we hope D Pers RCEME posts some new subalterns in "schnell" to take up the slack.

(See also page 34)

WHERE's WHO

By WO2 WE Davis

This puzzle comprises the names of the warrant officers of the Corps. Although there are fewer names than in the previous puzzle it should prove equally entertaining.

Instructions for working the puzzle are:

(1) Circle each name as you find it. Each name is printed in a straight line which may be forward, backward, horizontal, vertical or diagonal.

(2) Overlapping of names such as DROBOT and BOTTLE occurs but names such as ENO have not been included entirely within another name such as JOHNSTONE or CLOONEY.

(3) Although the names ENO and LEE each appear six times in this puzzle, LEE must be circled vertically to correctly solve the puzzle.

(4) The 45 letters remaining uncircled, after you have completed the puzzle, when properly arranged will spell out ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS.

Ablett
Adams
Alexander
Allen
Almdal
Almey
Anderson
Armstrong
Arscott
Asham
Ashdown
Atkins
Babb
Bailey
Baldwin
Balmer
Banks
Barker
Barnhardt
Barnes
Barrett
Bateman
Baynes
Beeson
Bellefontaine
Betcher
Bingham
Blackmore
Blair
Blanchard
Blanchette
Boisvert
Bowles
Boon
Both
Bottle
Boudreau
Boutillier
Bovey
Broadbent
Broomer
Brown
Buck
Burgess
Burns
Cameron
Campbell
Carefoot
Carr
Carver
Celli
Clarke
Clinton
Clooney
Colbridge
Coles
Colson
Coughlan
Coughlin
Cross
Crosson
Cunningham
Curran
Currie
Cyr
Dagenais
Dainty
Dand
Darton
Davis
Deans
Dillon
Dinner
Dodds
Doherty
Dorey
Doubleday
Drake
Drew
Drobot
Dudley
Dyck
East
Einarson
Elliott
Eno
Evans
Fairchild
Farnsworth
Ferguson
Fielding
Fitzgerald
Foley
Fourcaudot
Frankovich
Fyke
Gall
Gavriloff
George
Gill
Gladwin
Gordon
Goss
Greenshield
Griffin
Grouette
Guilfoyle
Halliday
Hanash
Harper
Hasler
Hass
Hangen
Hayes
Hennessey
Henry
Hewisson
Heximer
Hill
Hooper
Houlton
Hudson
Hurd
Hynes
Jackson
Jermey
Jodoin
Johnson
Johnstone
Keech
Kelly
Knowles
Konzuk
Krupp
Kutyik
Landry
Lannan
Lasuta
Leach
Lee
Lefebvre
Leonard
Lewis
Linzmayer
Little
Lowry
MacDonald
MacLean
MacLeod
Mahood
Mallett
Mandeville
Manktelow
Mansfield
Marin
Mason
Maxwell
McCormack
McDonald
McDow
McElroy
McGovern
McInnes
McIntyre
McKee
McLaughlin
Measor
Meloche
Mercer
Milne
Monkman
Montgomery
Moore
Morton
Munday
Myatt
Nelson
Neudorf
Norbury
O'Grady
Orme
Owen
Palmer
Paradis
Patterson
Payson
Perrier
Phillips
Pineo
Pomeroy
Price
Quinn
Rabey
Rawling
Reid
Rhodes
Rivers
Robertson
Rodd
Ronan
Ross
Rowe
Rutherford
Schleihauf
Schussler
Sheldon
Silzer
Sinclair
Smale
Snell
Sparling
Spragg
Squires
Stever
Stewart
St John
Storbo
St Pierre
Stringer
Suley

Summerfield
Szekeres
Szumlanski
Taylor
Thibaudeau
Thivierge
Thompson
Thoresen
Thorne
Tinman
Totten
Trattles
Trinca
Turner
Wallace
Walsh
Warren
Wendorf
Wild
Wilson
Wolfenden
Woodrow
Wright

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                                          D I E R
                                            A N
                                      N     O I     L
                                      N O S R A N I E
                                      L A S U T A T E
                                      M     L N     Y
                                            R O
                                          G E F C
                                          N I E H
                                        I C L L I T
                                      P N L L L L S C
          E R R E I P T S             N I O I E L A L             L A N N A N R W
          Y L E A C H P D               A O T B R E               B M T I F A O E
    C S R E L L A G I N I R A M           N U R F           B R O O M E R W R D R A K E
    U D T A K M I L N E B L A N C H E T T E O E O C O U G H L A N V R C L E D O D B F W
    N I C E C R L O N C O U G H L I N O P Y B R E M I X E H N T F E Y I S I V A D O U O
S A N N D K W I A E T R A M N L N C A A S V I H B G L S N L G O A Y N R I Z D S L U R R E S
L E I N E L H A L L E T K H A D I R Y I R A S A A L A E N O T W T G K P W N U E I G E G Y E
Y R N E H P E L R V C U O K E H A S A E L L I V E D N A M I O T L L E E E N Y M N O R N D L
T Y G R B C A I R T T J A C K S O N T B A L R W A R R E R D K D O G U I L F O Y L E B O A T
L T H E A U W A H Y T Y I Y G N E O D W E I X L O R R S C C A T O B N O O B E S I A T R R T
L N A N O B C I I S E N G D A G B L D Y L A M H U Y Q M R E P R A H B L H B A V D F N T G A
E I M I O R O K L M N N O P A A A M O O M E T C H U A G O S S R T R E B A E I R R U C S O R
N C Y W N S G U R S I E A D L L C R F C Y O R L I C M N I D R U O O E R A H S A N A H M K T
S M A D A N L E D L O R E M R G I F P D F A I R C H I L D E L A M L N M T B E T C H E R H I
    T L E M J E R R A N E R O O M N S S U L E Y M A Z V T E D E L M B O L Y B U E I S A
    T A L E X A N D E R C V G H G A Z E E S N I A E R T O B R E I A E A S A S R A E S S
      B C A P C I W N A E S E N N I C M N R M B R D E E E K B S Y F N R R U P N R L C
        A S W S O A A R U D O U B L E D A Y O E A L I N F P N N O C S E F L G E E H
        M O N K M A N C L U N I F F I R G Y H M L T T L M O E A H N G N E I K R U C
        D R A N O E L A O D N N E R R A W G E A K O E A L S O A R N O O A E E S E S
        C L I N T O N O L L I D E E J K C A M R O C C M I A R T I F S S Z M S L B F
          T A Y L O R M E E B P K O G S R E V I R M A H A D H R A D T S P L A O D
            S R D K E L L Y O R D N S T R S N R U B M L E N T K L S O O E M W J
            H C E E K N E O A O I E L C O O C N E C E P B S O N C K R R S L O O
            A N E G U A H B I D G D E I S D D L Y N R A S A B O N N B C E H R H
          M M K O N Z U K N L R E R G T T A U A R R O T E L Y W I A O S N Y D N T
            A H R Q E T T E U O R G R E Y T U A B E N T D M O L S B S S O R O S
            H C U U T H I B A U D E A U S G L S C E I E O D R E V E T S S D O O
            G I L R P F H F T O B O R D H A Y E S R E R H A E S S O R C L I W N
          S N A V E D P A B R O W N D L A N O D C M U S R L M A N K T E L O W R Y
          N I H T R O W S N R A F O I I T T O C S R A O O E O E N T H O R E S E N
          A B L E T T D S F R O D N E W O L F E N D E N F N P Y E S S E N N E H H
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Is loyalty a thing of the past? Many businessmen think so, and they are joined by educators and clergymen. Here, the question is probed by a psychologist of the Menninger Foundation: Loyalty, he finds, has not disappeared but it has changed remarkably.

WHATEVER HAPPENED TO LOYALTY?

Harry Levinson

What ever happened to good old-fashioned loyalty?

Company presidents complain that managers no longer identify with their companies. Despite promotion-from-within policies, management development programs and generous salaries, managers increasingly leave one company for another.

Among union leaders a similar cry is voiced. Why does the membership of one large union reject a long-time leader who has "done so much for them", and the staff of another form a union within their union to represent them in their dealings with their leadership?

A noted college president complains that faculty members flit from one college to another with little feeling for any one of them. Many, he complains, are preoccupied with the wooing of grants from foundations and government sources. They seem much more concerned with research that interests them and a congenial environment than with their obligations to the institution.

Recent newspaper stories report the protests of priests here and there, both in this country and abroad, about certain church policies. Yet these men have insisted that they continue to be loyal to the church. "How can they be and act that way?" some ask. And at least one bishop speaks of a "crisis of obedience in the church".

Quid Pro Quo

Loyality is an ancient concept which goes hand in hand with honor. In feudal times a man gave his king or lord his fealty in return for the lord's beneficence or protection. To be loyal was to have a place in a formal social structure and to live according to a code of fixed relationships and mutual obligations. In return for loyalty, the more powerful took care of the less powerful. To question the lord or to act against his wishes was to be disloyal.

The same ancient concept of loyalty was carried down to other social institutions -- the business, the university, the union, the church. All are organized in a hierarchical pattern in which the underlying assumption is that each level has command and control of all below it. Those below are expected to be loyal to those above and to respond willingly to their power.

When they are not "loyal" the common reaction is that people are not behaving as they should. They are ungrateful, unappreciative and selfish. The protestors share a common feeling of righteous indignation. As they experience the actions of their subordinates, they feel that they have been treated unfairly, rejected, or even betrayed.

The 'Nice" Boss

There remains indeed much of the tradition in management circles that if the employee is paid reasonably, the work place is adequately comfortable, and the boss is "nice", the employee should do as told, and do it cheerfully. Above all, the employee should stand behind and for the man who provides his bread and butter. If he does not do so, if he does not appreciate what he is getting, he is not a loyal employee.

This view is implicitly paternalistic and, in fact, much of the human relations movement in business during the last three decades has been an effort to disguise such paternalism. It did not work because changing circumstances made traditional, paternalistic conceptions of loyalty obsolete for many individuals and many organizations. Among the circumstances which produced this result, three stand out:

1. First, there is a drastic change in the ability required to rise in the ranks and hence in the rewards which loyalty alone can confer.

Paul B. Wishart, a leading industralist, put it succinctly. "There was a time within the memory of many of us", he said, "when a reasonably intelligent, reasonably personable individual with the self discipline to learn the business, the drive to work a little harder than the other fellow and the courage to assume leadership responsibility could usually work his way to the top ... This type of manager is having increasing difficulty; today's business complexities call for a different type ... The rate of development in the myriads of technical specialties has been so rapid we refer to it as a technological explosion. It would obviously now be impossible in the span of one lifetime for a top business manager to be able to have actual, meaningful experience in each of these activities. The modern manager, therefore, requires a broad-based education and experience that enables him to exercise effective managerial leadership of professionals, engineers and scientists, even though he does not have, by education or direct experience, as much knowledge of their technical specialties as they have."

Changing Goals

Mr. Wishart's comparison between past and present emphasizes that becoming a top executive is no longer a matter of rising on a fixed ladder in a stable organization to a command position. Today's emphasis is on the leadership of highly diverse specialists towards ever-changing goals.

Such leadership ability is relatively rare and when the choice must be made between unquestioned loyalty and unquestioned competence, today's organizations usually opt for competence. (This fact of modern life has not been lost on the ambitious. Since blind obedience is no longer a liberally rewarded virtue, it is no longer an assiduously cultivated one.)

Interestingly enough, the transfer of loyalty from the institution to the goal is also occurring in the military. Professor Allen Guttmann of Amherst points out that, "Compared to the European soldier, the American is deficient in reverence for the past as in a sense of military honor". Professor Guttmann is not depreciating the American soldier. His point is that "honor" has become less significant in the military as "heroic leaders" have been replaced by military managers.

2. The second drastic change is in people's expectations. Professor Abraham Maslow, of Brandeis, has pointed out that man's needs are arranged in a hierarchy. There are, first, basic biological needs; then needs for safety, protection and care followed by needs for gregariousness, affection and love relationships, and beyond these are needs for respect, standing and status, consequent self-respect; and the need for self-actualization or the fulfillment of one's potentialities. When the more elementary of these needs is gratified, the next higher level becomes the principal motive.

The very success of American enterprise has changed the relative pressure of psychological needs. With almost continued economic growth for twenty-five years, many Americans, and particularly those in the managerial and professional groups, found it relatively easy to meet their basic needs. To a lesser degree, working class Americans also found these basic needs fulfilled and felt relatively secure about them.

As a result, Americans turned to their organizations for fulfillment of higher level needs -- their need for safety, for protection and care. The organizations responded with seniority provisions, health insurance, pensions and the like. Need, in turn, moved to a higher level. Respect, status, self-fulfillment, psychological rather than material needs have become paramount.

This does not mean that people are unappreciative of those things which help fulfill the more basic needs. It means that they can fulfill these basic needs in almost any organization. They are therefore motivated to fulfill higher level needs. They are more likely to want to work toward goals which will meet those needs.

As Professor Frederick Herzberg, of Western Reserve University, and his colleagues Drs. Barbara Snyderman and Bernard

Mausner, have shown, when people have good wages, hours and working conditions -- these are the hygienic or environmental factors of work -- they will return a fair day's work but have little incentive to go beyond that. When, in addition, they feel they are being recognized, that they are achieving their goals and making good use of their capacities, they give more of themselves in the form of innovation, creativity and investment of energy.

Gifts or Respect?

A simple analogy may make the issue clear. Some parents work so hard to give their children the material things of life that they have little time to spend with the children. When, as it usually turns out, the children do not seem to appreciate what the parents have done for them, the parents become angry and accuse the children of ingratitude. In effect, the parents have expected to earn the love and loyalty of the children with gifts, rather than with that love and respect which helps the children to become mature adults. Like the feudal lord, the parent in such a situation wants loyalty for favors.

The same situation prevails in companies that try to buy the loyalty of employees with good fringe benefits while at the same time acting on the paternalistic assumption that the employees will then enthusiastically do what they are told to do. In such situations, and this is true of much American business, management keeps trying to fulfill needs which are no longer paramount.

3. The third drastic change is in the way American families live. Extended family units live together far less frequently than they used to. Grown children are often separated from their parents by many miles, and in some cases by vast social gulfs as the children attain education and status that the parents could not dream of.

In a curious way, this erosion of family ties resulted in erosion, though an ambiguous one, in the individual's relationship with the organization.

On the one hand, the very mobility that attenuated family ties made the organization more important to the employee. As he was shifted from one part of the country to another, the organization remained the thread of continuity in his life. This probably resulted in increasing loyalty to the organization. But it was a brittle kind of loyalty. Demands placed by such employees on their organizations were great, greater often than organizations could fulfill. In disillusionment, individuals who had previously severed close ties with parents and home towns, and who could move freely anywhere in the nation, found it possible though painful, to move from one organization to another.

At the same time, the younger generation of Americans has become increasingly independent. They have more money, more automobiles, marry earlier, are better educated and have higher aspirations. They have never known depressions and any of them, with a reasonably good education, is confident of his ability to find employment.

When they come into organizations as employees, they have greater expectations of being able to act relatively independently, to take a task and accomplish it, and of being heard. The Peace Corps and contemporary civil rights activities, no less than the war in Vietnam, are primarily the working, fighting and dying of young people. Regardless of anyone's value judgments about these efforts, they are realities. And they demonstrate what young people will do for goals which are worth the doing.

Pursuit of identification with an organization is often difficult when the individual brings a wish for increasing independence to an organization which operates on the paternalistic assumption that he will simply do as he is told and wait his turn. The relationship with an organization becomes even more trying to both parties when it takes place in an environment in which everything is subject to question, and the younger person is likely to be asking the questions.

The New Loyalty

All this does not mean that loyalty is gone or will go. It means, rather, that paternalism, however disguised, is going, and the kind of loyalty which was characteristic of paternalism must necessarily go with it. The old ways of achieving loyalty -- preaching it, inducing guilt, reinforcing it by tight controls and severe penalties, buying it by keeping people dependent and grateful -- no longer work.

And what will be in its place? Speaking of what has happened within the Catholic church, Editor Robert Hoyt, of the National Catholic Reporter, says that Catholicism is being transformed from a religion of paternalism to a religion of personal responsibility. In such a transformation, freedom of language and thought by the laity is not just a by-product of loosening controls, but is required, for it becomes part of the responsibility of the laity to express their opinions on those things which concern the good of the church.

The same trends which are at work in the church are also at work in business and other social institutions. Mr Wishart noted this in observing changing styles of leadership in industry. Instead of trying to compel loyalty by the forces of guilt or outside social pressure, the new style leader creates conditions under which it evolves naturally.

He begins by recognizing that loyalty is a feeling of living according to values which have special importance. People these days want to live with themselves and with others as mature adults. They want to behave in those ways which are most effective in helping them not only to master their world but also to live in it with reasonable psychological comfort.

The new kind of loyalty -- really, it is quite old -- comes about in several ways, the most important of which is by identification and assimilation. People identify with others and want to emulate them, to make the values of the others a part of themselves, if they experience positive relationships with others. Bonds of affection are the true bonds of loyalty. Affection and respect arise when people feel that others care about them. We feel that others care about us when they teach us fruitful ways to live and how to solve our problems better. Most of us remember fondly old teachers, ministers, scoutmasters, who at one time or another were like parents to us. We frequently wish we could be like them in those helpful ways. The values of these people are enduring ones because they are built on love and consideration: They help young people grow to independence and maturity. The same considerations govern loyalty in the workaday world.

The New Leader

To create the conditions for loyalty, the manager may find these suggestions helpful:

Be open with subordinates. The omnipotent boss is going fast. Nobody knows enough these days to pose all the problems or to have all the solutions at hand. Bosses make believe they are omnipotent when they play it close to the vest. Such pseudo-omnipotence is merely a form of manipulation and those who are subject to it are rightfully contemptuous when the same boss talks about loyalty.

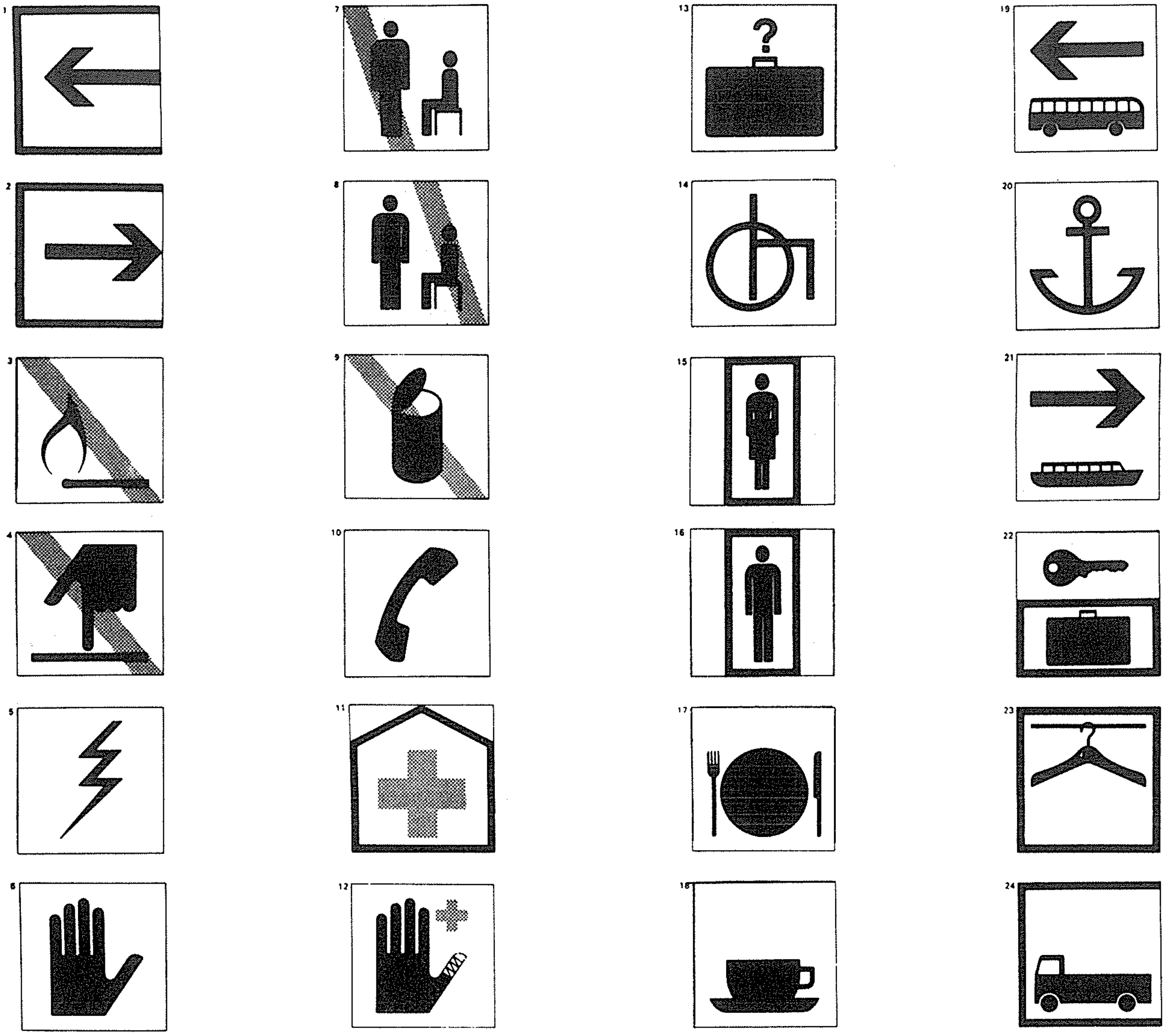
Make it possible for people to meet together as responsible adults to solve mutual and common problems. Where the livelihoods of many people are involved, they have a right to help solve their own problems. Rather than threatening them, driving them, comparing them unfavorably with one another or trying to buy them off, let them see the problems to be solved in making the business profitable. If the problems are worthy of their effort, and if the leader provides guidance and support, he will not have to worry about loyalty.

Offer people both the opportunity and the challenge to be responsible both for their work and the fate of the organization. But do not try to con them by equating opportunity with money, and responsibility with doing what you want them to do. What can they do with their lives in the organization that makes life worth living? The work itself often doesn't do that; not much of the work people do is worth the expenditure of their lives. But no matter what the work, by sharing in the responsibility for planning and executing the work, a man can feel like a man -- and that is worth living for.

Recognize that loyalty is no longer to be equated with blind obedience. The most loyal person may well be the most fervid member of the loyal opposition. The person who raises questions about how things are done, what assumptions are made, and what changes have to take place, what is coming in the future, what things anger and discourage people, is the man who helps the organization survive. Provisions should be made for hearing his voice. Yea-sayers are agreeable, nay-sayers the yeast of growth.

The fundamental conditions for loyalty, then, are simple: freedom for ideas to be examined, freedom to define the problems to be solved, and freedom for all in the enterprise to direct their energy to solving them. When those conditions are met, a manager will never have to ask where loyalty went.

- THINK, the magazine of
International Business
Machine Corporation



NEW SIGN LANGUAGE FOR EXPO

SINCE visitors to Expo 67 will be coming from all over the world, the Exhibition has made a special effort to avoid written messages.

To surmount the language barrier it created its own sign language.

Without these signs-there are 24 of them-the polyglot crowds might become lost, confused, uncomfortable, even hungry.

How many can you identify before reading the legend?

1—Entrance
2—Exit
3—No fire
4—Don't touch
5—Electricity
6—No admission
7—No standing
8—No sitting
9—Anti-litter
10—Telephone
11—Hospital
12—First-aid
13—Lost-Found
14—Handicapped
15—Women's WC
16—Men's WC
17—Restaurant
18—Coffee Shop
19—Bus Station
20—Marina
21—Ferry Dock
22—Locker
23—Cloakroom
24—Delivery entrance

SPANNER SPEAKS AGAIN

Sennelager is drawing to a close, and soon the Shock Troops of 4 Field Workshop, the Fighting FRP, will be returning from their sojourn there. To be truthful, the FRP has had help with their tasks in the wildwood. Detachments have been provided from Control, Recovery, Vehicle Platoon, RCOC Platoon and Weapons and Electronic (frequently known as Weapons and Retarded) Platoon.

The rest of the workshop paid several visits to Sennelager to shoot, blow things up, throw grenades etc. However, they could not be persuaded to spend a night at "the sharp end". Nevertheless, we were pleased to see them in the field, if only temporarily.

The highlight of the concentration was the all ranks party held by the FRP and attached personnel last week. Music was provided by the New DJ's from Soest; and excellent music it proved to be. The boys played Country and Western and Folk Rock and even managed to wring a few choruses from the assembled multitudes during the course of the soiree. The highlights of the evening were twofold: The first was Bob Jobin doing his world famous imitation of Fred Astaire. The second occurred somewhat later when we had an unexpected power failure and black out while over half the members were en route to the bar for refills.

Apart from the other events of the concentration, we had several important guests during our stay. They included Brigadier Amy and several staff officers from Brigade HQ. We also had visitors from the rear party in Fort Chambly several times. Last and least, we were paid social calls by a herd of wild pigs and other types of 'wee beasties' on several other occasions. These latter seemed to find us irresistable.

Meanwhile life carries on back on the Fort Chambly Frontier. Here is a report from Sgt AL Gattrell of Rear Party on their antics: The time of year has arrived when golf is the topic of conversation around 4 Fd Wksp, or at least used to be. To see if we are still a swinging lot I conducted a personal survey with some startling results.

My first observation was a serious faced Cpl painting some little round balls during break time. A closer look revealed them to be ping-pong balls. Repaints for little old ladies on a miniature course? Well, not exactly. It seems they were for the Scuba divers club picnic. I never did find what use the balls had because it was a club secret. Perhaps they toasted them for Marshmallows, but I rather suspect they were used in some form of diving contest. There was obviously no connection with golf here.

The next group I spied was an under-thirty lot. They seemed to be talking in unfamiliar terms for golfers. I never heard of check points and a navigator on a golf course, and who ever heard of missing a check point and losing strokes or points. Mechanized golf wagons yes, but what of a two carburetor, rally Kapitan on the fairways. Oh well, wrong again, but don't despair; this next group's conversation sounds better. It almost sounds like singing. It is singing.

Do Do a female deer
Ra a drop of golden sun -- we've
go it -- by Jove we've got it.

All right, you barber shop quartet is all together. Oh never mind, there's Joe Kutyk, the unit's Ben Hogan. Hey Joe, how's the course this year? What, packed your clubs, flying out to Victoria? Well, see you around sometime and good fishing.

I suppose if one is to remain in this unit he must scuba dive, rally or sing to get along. Decisions, decisions, which will it be? By Jove, I've got it.

Oh give me a home
Where the buffalo roam. . .

Now we know what rear party does!

MAIL YOUR CONTRIBUTIONS
TO THE EDITOR OF
RCEME TECH BULLETIN
McNAUGHTON BARRACKS
KINGSTON, ONTARIO

MOOSE RECOVERY

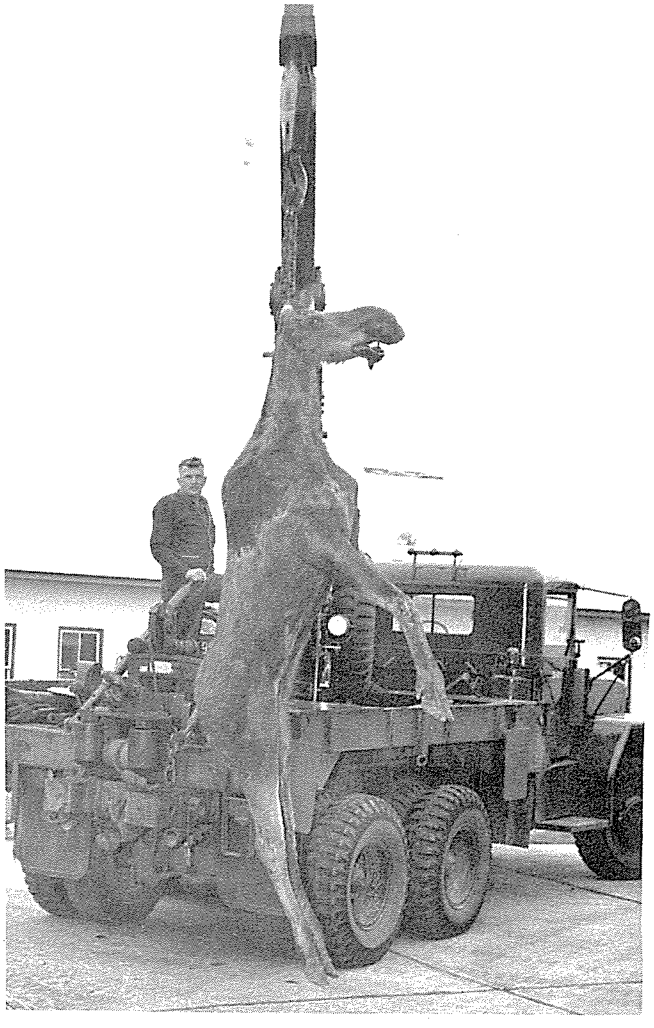
On 12 Jun 67 a recovery call came from the Provost to look after a moose that had tangled itself in the fence of the Base Construction Section.

Due to extensive injuries, the moose had to be shot and disposed of.

Mr Les Severin of Base Maintenance Section had the job and is seen on the recovery vehicle.

This incident is reminicent of a situation that the Base Maintenance Officer (a native of Halifax) recalls concerning a horse in that city.

Early morning recovery at CFB Petawawa Ontario. Halifax had its horse, Petawawa can now claim a moose!



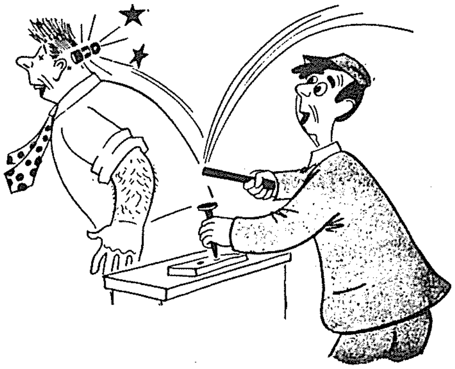
PROPER USE OF HAND TOOLS

Each year hand tools are the source of about 7 or 8% of all compensable injuries. Disabilities resulting from misuse of tools or using defective tools include loss of eyes or vision and puncture wounds from flying chips and slivers from concussion tools, severed tendons and arteries from cutting tools, broken bones and contusions from slipping wrenches.

Failure to observe one or more of the following four safe practices accounts for most hand tool accidents:

1. **Select the Right Tool for the Job.** Never use a wrench for a hammer or pliers instead of proper wrenches.
2. **Keep Tools in Good Condition.** Wrenches with cracked or worn jaws or hammers with loose heads should never be used.
3. **Use Tools in the Right Way.** Never pull knives toward the body or strike two hardened tools together.
4. **Keep Tools in a Safe Place.** Many accidents have been caused by tools falling and by knives, chisels and other sharp tools carried in pockets or laid loosely in toolboxes.

All the above examples of failure to observe rules resulted in injuries at Kingston Works last year.



Before you strike a blow
With hammer you should know
That the head is on the handle good and tight,
Then you'll never smite your neighbors
In the middle of their labors
And you'll keep the safety record clean and bright.

M113A1 Road Wheel Life - To get maximum life of the road wheels of the M113A1 they should be rotated 'inners for outers, fronts for rears' and vice versa when the inner wheels on the centre three stations are at about half life. This half life cannot be definitely laid down because it depends wholly on the type of terrain over which the vehicle is driven so crewmembers and RCEME tradesmen in units must use experience and common sense in determining it.